



Invasive Plant Management Strategy

Introduction

The Simcoe County Forest Management Plan 2011-2030 notes the increase of invasive plant introductions over historic records (section 1.1, Purpose and Scope). The 2011-2030 management plan further identifies the impacts of invasive plants and their implications on forest health, productivity and biodiversity (section 3.5., Forest Health). Finally, the management plan discusses the need for a strategy to be developed to address this objective (section 5.4.3, Implementation, Invasive Plants). It is the purpose of this document to provide further detailed strategic direction for the management of invasive plants within the SCF.

Invasive plant management strategies generally follow a hierarchical, four step approach that concentrates on:

- Prevention
- Early Detection
- Rapid Response
- Monitoring

The SCF Invasive Plant Management Strategy utilizes this framework with modifications:

- Prevention
- Detection
- Response & Control
- Management
- Research & Monitoring
- Adaptation

Background

The SCF is the largest municipally owned forest in Ontario. It encompasses over 33,000 acres and is distributed across 133 properties. It is managed forest that provides significant economic, social and ecological benefits to the County of Simcoe. The 133 SCF properties include more than 690 km of property boundaries. These boundaries not only abut residential, commercial and industrial land but provincial highways, township roads (and all scale of road in between), railroad, pipeline, hydro corridors, wetlands, lakes and rivers.

The forest is also heavily used for recreational pursuits. The SCF sees tens of thousands of visitors annually. There are over 3000 registered members from 13 organized recreational clubs. These user groups maintain and share 380km of designated trails.

There are significant numbers of invasive plant species within the larger region surrounding the SCF. Some species are more common than others, while some are rarely found or only exist as a nearby threat. Of these species, some have become almost naturalized and have little impact while others have devastating effects when introduced.

This fragmented and heavily used forest faces increased chances of invasive plant introduction through many different pathways. The large area, expansive property distribution and wide ranging forest uses, users and neighbours add a deep level of complexity to invasive plant management.

Prevention

Invasive plant introductions happen in several ways. Common introduction pathways include but are not limited to:

- Dispersion through wind borne seed movement
- Movement by wildlife through attached seed or ingested seed (common in seed eating birds)
- Movement of seed through human activity (seed contained in mud on shoe, bike tire, motorized vehicle, etc.)
- Illegal disposal of organic waste

These introductions can bring seed a few meters or hundreds of kilometers. The prevention of invasive plant introductions through these pathways is not always possible but prevention of introductions through identification of key pathways is the first defense and a valuable strategy in the management of invasive species.

Prevention can involve a minimal amount of resources yet provide significant payoff. Although prevention is not always possible, efforts put into prevention can pay dividends by reducing the long term impact of invasive plants and easing demands on management resources. It however can be very difficult to evaluate success at prevention unless you are failing significantly. Several policies and initiatives are recommended to help prevent the introduction of invasive plants.

Education

Informing forest visitors about invasive plants, their impacts and spread should be increased with a focus on specific groups.

General Public

- Install signs in areas of high visitation to educate public about invasive plants including how to reduce introductions and how to report occurrences
- Identify and install signage in areas where illegal dumping of organics/yard waste is common
- Enhance webpage to educate residents and recreational users about invasive plants
- Increase enforcement and notification in areas that are problematic organics/yard waste dumping
- Provide notifications via mail regarding invasive species and organics/yard waste disposal in areas with a high frequency of illegal dumping
- Remind residents of the free collection program for organics offered by the County of Simcoe

Recreation clubs

- Increase contact and partnerships with club leaders and general club membership regarding invasive plants
- Recruit and educate forest users to help monitor the forest and get more “eyes on the ground”
- Discuss invasive plants at recreational meetings
- Encourage recreation clubs to adopt and promote the clean equipment initiative and the importance of staying on trails

Trail Development

There are multiple organized recreational users in the SCF which have developed and continue to develop trails through ‘Property Use Agreements’. Under these agreements they are responsible for their own trail development and maintenance with oversight from county staff. Staff have worked to keep trail development outside of more sensitive areas.

- The County Forest Recreation Policy precludes further trail development within or near sensitive natural areas including wetlands, near rare, threatened or endangered flora or habitat of rare, threatened or endangered fauna, or Areas of Natural or Scientific Interest
- Staff to reaffirm importance of clean equipment policy and extend scope beyond recreational vehicles to include maintenance equipment and tools

Forest Operations

Tending and harvest operations lead to forest disturbance. This disturbance is a key factor in forest ecology and important in forest regeneration and management. Harvest operations are often intended to imitate natural disturbance patterns to achieve silvicultural objectives. However, disturbances in an area with an invasive seed source can encourage the significant spread and growth of invasive plants and can lead to rapid population growth.

Forest operations and silvicultural objectives are to be altered to mitigate negative impacts from invasive plants. Forestry relies on the continued growth of tree seedling and saplings and invasive plant growth can severely impede this process.

Key preventative measures regarding forest operations to implement include:

- Implementation of clean equipment policy
- Enhanced inventory for invasive plants prior to harvesting

See Appendix C for further detail.

Detection

The SCF land base is extensive; absolute details on every portion of the forest is not possible, however regular monitoring is conducted to detect invasive species as early as possible. This is accomplished using a variety of techniques:

Staff Monitoring

Property inspections are completed by staff on a regular basis. These inspections have a focus on the entire forest tract and include the assessment of infrastructure such as parking areas, gates, signs and roads. They also include inspections for invasive plant introductions.

Detailed forest inventories are also completed on a schedule that is designated within the forest management operating plan. Invasive plant inspections are part of these inventories.

Public Reporting

Public reporting of invasive plants is encouraged through County signage and engagement with recreational user groups and the general public. The Ontario Invasive Plant Council also encourages public reporting through their invasive species hotline and through the use of the EDDMapS App (Early Detection and Distribution Mapping System). Reports are typically received by phone, email and through the EDDMapS App. These reports are then verified and SCF staff can access them and add the data into the SCF invasive plant database.

Contractor Monitoring

The SCF utilizes contractors for some work including most tree marking, harvesting and infrastructure projects. Contractors that spend significant time within the forest are trained in invasive plant identification to provide increased surveillance. Any invasive plant reports are passed on to SCF staff.

Data Collection

Data collected from monitoring is maintained and managed in a database with GIS capabilities.

The following minimum details are collected:

- Species
- Location
- Infestation size

Verified reports can then be added to the database. This information is fundamental to the implementation of an efficient invasive plant management strategy including the ability to continue to assess effectiveness and adjust efforts accordingly.

See Appendix A for details on the SCF monitoring process.

Response and Control

Response

A rapid response to the detection of an invasive plant within the SCF may be the most significant factor in management success. A rapid response will allow a new introduction to be assessed quickly and managed before the plant has the chance to spread or develop a seed bank in the soil, thus reducing the overall resource needs. However, it is important that any responses are considered through a strategic process.

Available resources need to be evaluated to assess if they are being efficiently used, if they will deliver the expected outcome and if they are being appropriately prioritized. A decision making key is available to assist in evaluating priorities and can be found in Appendix B.

Considerations when allocating resources or setting priorities include:

- If the species is a new introduction or an un-common or common invasive plant
- If a response will accomplish eradication, population reduction, containment or will have little effect
- If there are significant ecological threats from the invasive plant
- If the invasive plant is present within a sensitive habitat, a high conservation value forest or an area used by species at risk
- If resources are available for a continued response considering many responses will require a multi-year approach
- If the area prone to disturbance that could increase the population or spread

Control

If invasive plants are present and management is a priority, control methods usually fall into four categories. The appropriate approach will require an understanding of the infestation, resources available and best management practices for management. The four categories generally employed are:

- Cultural
 - The implementation of cultural practices such as a reduction in disturbance or, change in site characteristics (such as change of light levels through management of other vegetation. I.E. maintaining a closed forest canopy over a plant that requires full sunlight)
- Mechanical
 - physical removal of plant by hand pulling, plowing, mowing, cutting or other method
- Chemical
 - Application of herbicide or other chemicals to inhibit growth or development
- Biological
 - Introduction or enhancement of a biological control agent that impedes growth. These can include native or non-native host specific insects that reduce the target invasive plant population. (Note this is conducted only following an extensive research and approvals process and is not conducted directly by Simcoe County).

An integrated approach using several control methods should be considered where appropriate. Selecting the proper control method(s) is vital to successful management and will ensure goals are achieved.

Management

Active management

Active management of invasive plants is conducted within approximately 100 to 200 hectares of the SCF annually. The most appropriate control method is used during active management (cultural, mechanical, and chemical). Chemical control methods on most sites require the least use of resources and achieve the best results. This method is utilized for the majority of active invasive plant management within the SCF. The SCF holds Forest Stewardship Certification and is required to adhere to the pesticide policy which places regulations on the use of all pesticides regarded as “highly hazardous.”

Modified operations

Forest operations have been modified and adapted to mitigate impacts to the introduction, spread and population increase of invasive plants. Policies and procedures implemented to reach these objectives include:

- Implementation of a clean equipment protocol and means to inspect (requirement of equipment to arrive on site clean with no hitch-hiking seed)
 - Invasive species monitoring before and after harvest operations to rapidly manage any introductions or increases in spread that harvesting may have created or intensified
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- Management of invasive species prior to harvest operations to eliminate or reduce spread
- Modification of silvicultural objectives to mitigate invasive plant impacts or assist with control measures (harvesting can improve conditions for herbicide applications)
- Exclusion of specific areas from harvest if invasive plants are present and impact will be significant
- Timing restrictions (seasonal) on harvest operation to eliminate introduction or spread if invasive plants

See Appendix C for additional information.

Research and Monitoring

In addition to management of invasive plants, continued monitoring provides feedback to be incorporated into an adaptive management process. This assists in refining management approaches to become more efficient and successful at invasive plant management. SCF staff regularly liaise with the Invasive Species Centre, the Ontario Invasive Plant Council, the Canadian Food Inspection Agency and other government agencies at all levels to keep current and promote the transfer of knowledge.

Historically, the SCF has partnered with agencies and individuals who are researching invasive species control topics including control methods and/or population dynamics. This research assists in the continued increase of knowledge of invasive plants and should continue where value can be achieved.

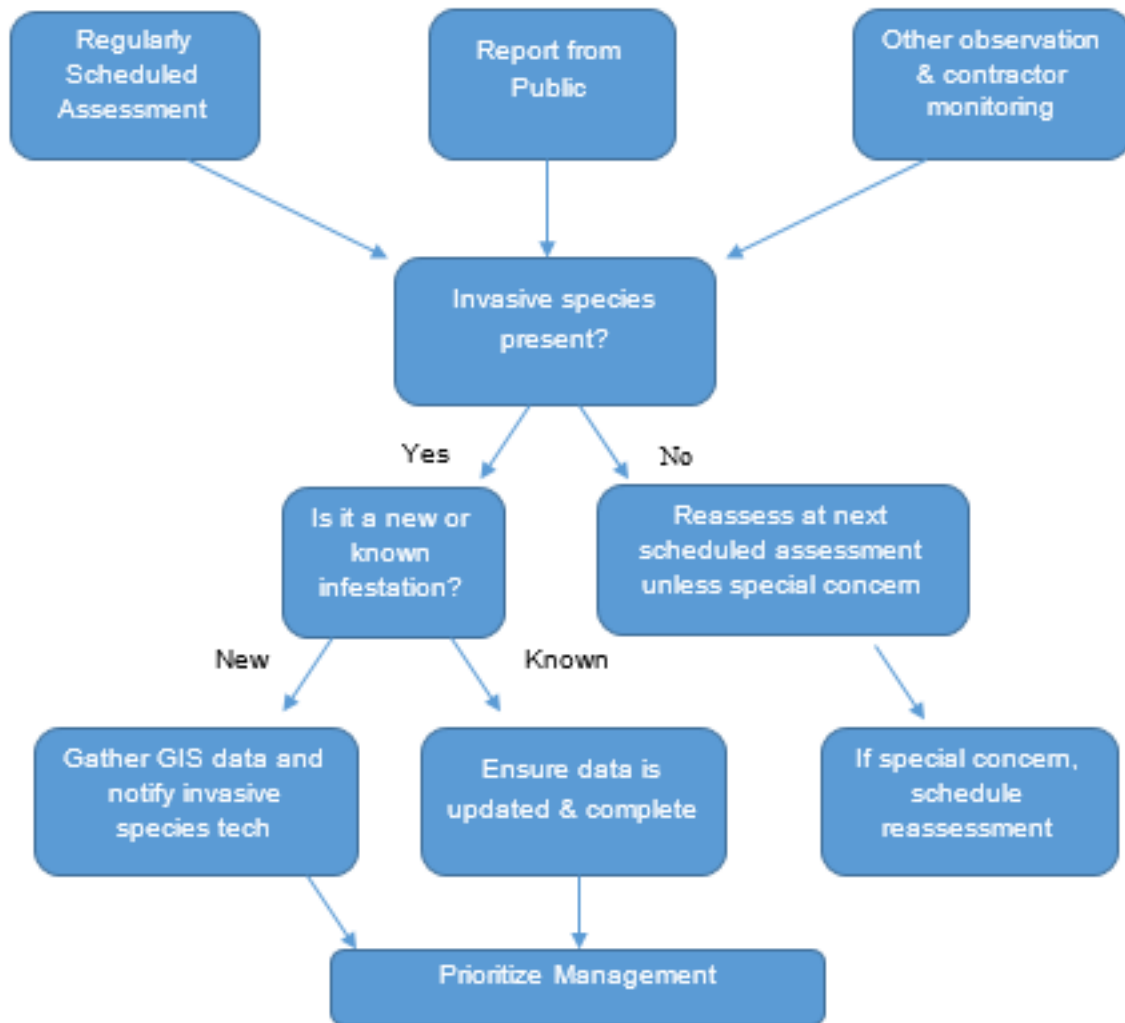
Adaptation

Utilizing an adaptive management approach will require the continued modification of this invasive plant management strategy. An adaptive approach will allow better methods to be implemented as more knowledge becomes available, conditions or resources change, new plants arrive and new technologies become available.

This approach will be key to protecting long term forest health, productivity and biodiversity within the Simcoe County Forest.

Appendix A.

Invasive Species Monitoring Approach



Appendix B. Invasive Species Management Prioritization

1. Is invasive species common, un-common or a new species within the SCF?
Common – Go to 2
Uncommon– Go to 2
New – Go to **A**
2. Is eradication likely?
Yes – Go to **A**
No – go to 3
3. Is containment or successful management possible?
Yes – Go to 4
No – Go to **C**
4. Is area HCV, scheduled for harvest or are ecological impacts significant?
Yes – Go to **A**
No – Go to **B**

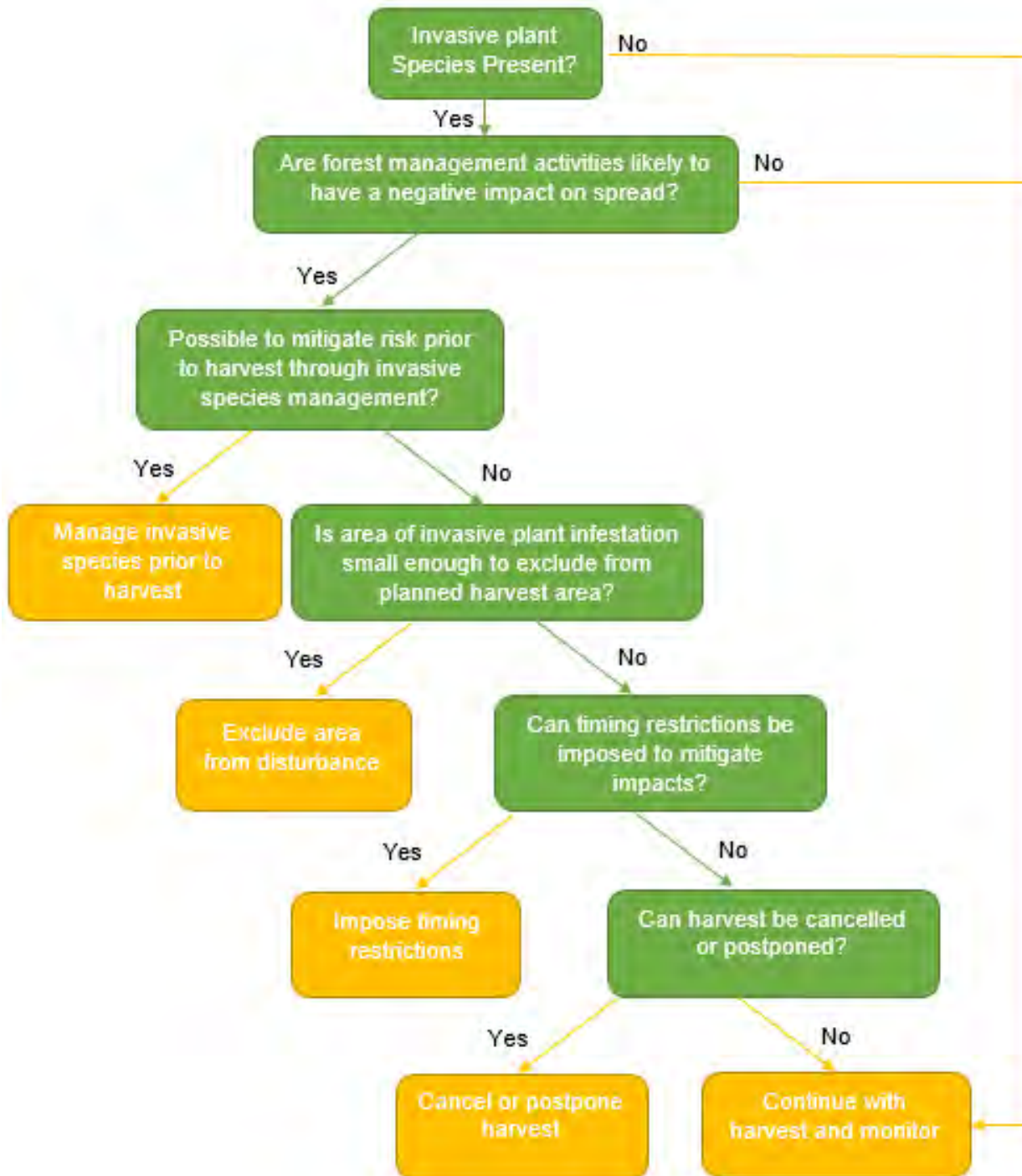
A – High Priority

B – Moderate Priority

C – Low Priority

Appendix C.

Harvest Operations – Invasive Plant Considerations



Appendix D.

SCF – Primary Invasive Plant Species of Concern

Species	SCF Status	SCF impact	Ability to control
Black Locust	uncommon	low	moderate
Buckthorn	common	high	difficult
Dog Strangling Vine	common	high	difficult
Garlic Mustard	common	moderate	difficult
Himalayan Balsam	uncommon	moderate	moderate
Japanese Knotweed	uncommon	low	moderate
Knapweed	common	low	moderate
Lilac	uncommon	low	moderate
Manitoba Maple	uncommon	high	moderate
Norway Maple	uncommon	moderate	moderate
Periwinkle	common	low	moderate
Phragmites	uncommon	high	moderate
Scot's Pine	common	moderate	difficult
